Med-Tec Inc

Iowa Manufacturing Extension Partnership

Breast Board FEA

Client Profile:
MED-TEC, Inc. is located in Orange City, Iowa, and employs 100 people. The company was founded in 1983 and has over $30 million in sales. MED-TED is a global leader in the design, development, and distribution of oncology products and systems essential for accurate cancer diagnosis and treatment.

Situation:
MED-TEC was considering changing the material makeup of a breast board component of a patient positioning table. The objective was to create a breast board made of injection molding carbon fiber which would replace the current laid-up carbon fiber material. If the new material would work, production costs would be reduced. If the material did not meet requirements, then a cost avoidance would take place. Before going to production, the proposed new material needed strength of material analysis to ensure product reliability. MED-TEC contacted the Iowa Manufacturing Extension Partnership (IMEP), a NIST MEP network affiliate, for assistance.

Solution:
The IMEP assessed the situation and referred it to Iowa State University's Center for Industrial Research and Service (CIRAS). A finite element analysis (FEA) was used to evaluate the stresses on the breast board material by the pins that are inserted into the board and attach to the breast board adjustment mechanism. This analysis may reveal if the pins will break out, and provide information on necessary design changes. The analysis indicated that the new breast board material would not meet material loading requirements, which provided a cost avoidance of approximately $250,000 for setting up new production tooling and equipment.

Results:
* Analyzed breast board material and discovered it would not meet material loading requirements.
* Provided cost avoidance of $250,000 for setting up new production tooling and equipment.

Testimonial:
"The IMEP was able to put us in contact with CIRAS (Center for Industrial Research and Service) at Iowa State University to perform a finite element analysis of a new material and manufacturing technique. Unfortunately, the material and process did not suit our needs, but by using CIRAS we avoided moving forward, thereby saving approximately $250,000 in tooling and development costs."
Benjamin Langton, Project Engineer